

Application Serial No. 09/869,789
Amendment dated November 19, 2004
Reply to Final Office Action dated May 20, 2004, and
Advisory Action dated September 9, 2004

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-28 (canceled)

Claim 29 (currently amended): Raster probe microscope according to ~~claim 1~~ claim 34, wherein the arrangement for moving the raster probe and/or the sample comprises at least one first piezo element.

Claim 30 (canceled)

Claim 31 (currently amended): Raster probe microscope according to ~~claim 30~~ claim 34, wherein the oscillation direction runs one of parallel and perpendicular to one of the sensing and scanning direction.

Claim 32 (canceled)

Claim 33 (currently amended): Raster probe microscope according to ~~claim 32~~ claim 34, wherein the first frequency is 500 Hz to 1 kHz and the amplitude is 10 to 500 nm.

Claim 34 (currently amended): ~~Raster probe microscope according to claim 30 A raster probe microscope for the examination of sample surfaces, comprising:~~

a raster probe;
a holding device for a sample with the sample surface to be examined;
an arrangement for moving the raster probe and/or the sample by which the probe and sample can be brought into contact so that they interact with one another in a given manner;
an arrangement for detecting the relative movement of the probe and sample;
an arrangement for controlling the movement of the raster probe and/or sample and for exciting a vertical first raster probe and/or sample oscillation and for exciting at least one of a vertical and horizontal second raster probe and/or sample oscillation; and

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an arrangement for detecting at least one of a vertical and lateral deformation of the raster probe in a vertical first oscillation and at least one of a vertical and horizontal second oscillation;

the arrangement for detecting deformation recording two measuring signals characterizing the deformation of the raster probe in a vertical first oscillation and at least one of a vertical and horizontal second oscillation of the raster probe and/or sample, and characterized by periodic raster-probe and/or sample oscillations,

wherein the vertical oscillation of the raster probe and/or the sample occurs with a first frequency of at least 10 Hz and a first amplitude of at least 1nm;

wherein the vertical oscillation of the raster probe and/or of the sample is additionally excited or modulated with a second frequency of at least 1 kHz and a second amplitude of at least 0.1nm.

Claim 35 (currently amended): Raster probe microscope according to claim 34, wherein the second frequency ranges from 5 kHz to 1 MHz and the amplitude from 1 to 10 nm.

Claim 36 (currently amended): Raster probe microscope according to ~~claim 30~~ claim 34, wherein the second raster-probe and/or sample oscillation is a horizontal oscillation with a frequency of at least 500 Hz and an amplitude of at least 0.1 nm.

Claim 37 (currently amended): Raster probe microscope according to claim 34, wherein the horizontal oscillation frequency ranges from 10 to 100 kHz and the amplitude from 1 to 30 nm.

Claim 38 (currently amended): Raster probe microscope according to ~~claim 30~~ claim 34 including an evaluating arrangement for the two measuring signals for the simultaneous determination of at least two material properties from the group consisting of the adhesion, the static and dynamic friction, the surface topography and the elasticity and rigidity.

Claim 39 (previously presented): Raster probe microscope according to claim 38, wherein the evaluating arrangement comprises one of a lock-in amplifier and a microcomputer.

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Claim 40 (currently amended): Raster probe microscope according to ~~claim 28~~ claim 34,
wherein the raster probe is a point or tip of one of a force microscope and an optical near-field
microscope.

Claims 41- 54 (canceled)